

ABSTRACT

The present invention is to provide a phase change memory device having a new structure which can be easily
5 manufactured by mass-production with a high yield rate, therefore, reducing the cost of process and providing reliable device characteristics, and a manufacturing method thereof. The present invention provides a phase-change memory device comprising: a lower dielectric layer;
10 a lower electrode, at least a part of the lateral surface of the lower electrode being surrounded by the lower dielectric layer; a thin dielectric layer including a pore having smaller area than the top surface of the lower electrode, aligned to the top surface of the lower
15 electrode and extending to the top surface of the lower electrode; and a phase-change resistor filling the pore and formed on the thin dielectric layer. In the proposed structure of the present invention, the pores or local damaged spots can provide a micro path of current and
20 localize the phase-changing volume in the phase-change resistor. Thus, the phase-change memory device can be operated with very low power.